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ABSTRACT

This brief paper suggests that Attention Deficit Disorder (ADD) may result from a specific "novelty seeking" gene which has been associated over the history of man's evolution with a biological advantage in situations where energy, risk taking, and creativity are essentials. It reviews research on the genetics of ADD which suggest that novelty seekers have a modified form of the D4DR gene on chromosome 11 which controls the formation of receptors for the neurotransmitter dopamine. Novelty seekers are reported to be generally impulsive, exploratory, quick tempered, and extravagant. Anthropological and sociological studies are reported to show the traditional existence of three types of human societies: hunter/gatherer, settled/villager, and complex/specialized. Successful members of hunter/gatherer societies need to be energetic (hyperactive), resourceful (creative problem solvers), enjoy changes (novelty seeking), able to react rapidly (impulsive), and able to live by their wits (risk takers), all characteristics of ADD individuals. The paper suggests that a greater incidence of ADD in the pioneering societies (United States, Canada, Australia, and New Zealand) compared to Europe may be due to a higher frequency of the "novelty seeking ADD gene" in the pioneer settlers of these nations and that the prevalence and severity of ADD symptoms increase with accumulating life stresses. (Contains 13 references.) (DB)

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ATTENTION DEFICIT DISORDER - A NEW AGE YUPPIE DISORDER OR AN AGE OLD HUMAN CHARACTERISTIC ESSENTIAL FOR OUR SURVIVAL?

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Community awareness and scientific knowledge of Attention Deficit Disorder (ADD), has increased rapidly over the past 20 years. Many adults now recognize their own current or previous ADD symptoms which explain their need for constant activity, frequent job changes, fear of boredom, enjoyment of new challenges and risk taking ventures, while impulsivenes, insensitivity, procrastination, unenthusiasm for mundane tasks, poor memory and difficulties with report or essay writing, may impair relationships and impede job performance (Hallowell E. M. & Ratey J. J.). Aware of similiarly affected forefathers and current family members, adult ADD sufferers, question the origins of ADD and ask why this common family trait has become associated with a world wide medical, social and educational problem. While Clinicians, psychologists and medical researchers have identified core ADD symptoms, developing standardized diagnostic criteria, has led to international debate about variations in the incidence and severity of ADD.

Although George Still wrote one of the first medical descriptions of ADD in 1902, there is anecdotal evidence that famous men throughout the ages, for example Leonardo Da Vinci (b.1642) and Winston Churchill (b.1874) suffered from recognizable symptoms of ADD (Serfontein, G.). Medical research on the pharmacological effects of traditional herbal remedies show widespread use of certain substances to alleviate symptoms of ADD. Ginseng has been used in China and other oriental societies for about 5000 years. Many different medications are now being used to treat symptoms of ADD, and our understanding of basic neurochemical function, has progressed beyond Bradley's observations in 1937, that psychostimulants (Benzedrine) could have paradoxical effects and calm hyperactive children.

Research in Australia has focussed on the genetics of ADD. In a large twin study Levy and Hay, have shown that ADD is more common in identical (monozygotic) twins, while the incidence in fraternal (dizygotic) twins and siblings is quite similar. Benjamin (USA) and Ebstein (Israel), have reported genetic differences between edgy 'novelty seekers' and those who are more careful and reflective. Novelty seekers have a longer sequence of the chemical subunits which form the D4DR gene on chromosone 11, which controls the formation of dopamine receptors and thus the actions of the neurotransmitter Dopamine. These studies support the current hypothesis, that dopamine activity may determine novelty seeking behaviour. Differences between individuals, revealed that high scoring novelty seekers were 'impulsive, exploratory, quick tempered and extravagant', while low scorers were generally 'reflective, rigid, slow tempered and frugal'. The characteristics of high scorers are more 'ADD like' and those of low scorers more 'obsessive and compulsive'. While it is premature to equate the action of the D4DR gene with an 'ADD gene', further research into the genetic control of neurotransmitters could determine fundamental biological differences in human temperament and behaviour.

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Anthropological studies into primate evolution, combined with various gene mapping techniques have increased our understanding of human evolution. They support the hypothesis that peoples of all races share a common gene pool and probably a common ancestor (Leakey, R., Leakey M.). Man and other primates are primarily social beings, and sociologists note increasing specialization of social structure with the acquisition of language, literacy and sophisticated communication skills. Evolution, a process of genetic selection, improves chances of survival by selection of individual and societal characteristics which confer personal, economic or social advantage. Therefore, the establishment of any successful society infers superior genetic, organizational and adaptation qualities.

Sociological studies into the organization of various historical, contemporary and traditional tribal societies differentiate three distinct types of human societies: Hunter - Gatherer (HG), Settled - Villager (SV) and Complex - Specialized (CS). HG are nomadic, SV cultivate crops, while CS showing task and social specialization, include the great civilizations of India, Egypt, Greece, Rome as well as contemporary Western societies. Successful members of HG societies need to be energetic (hyperactive), resourceful (creative problem solvers), enjoy changes (novelty seeking), able to react rapidly (impulsive) and in the absence of a permanent food supply to live by their wits (risk takers). They live in the present, and survival depends on rapid response rather than forward planning. They have no formalized written language but use their superior artistic skills to draw and paint important events. They are organized into tribes, ruled by a chieftain. They seek protection from the vagaries of nature, choose male gods and create myths and legends which pass knowledge from one generation to the next. SV societies need members who, like farmers, pay attention to seasonal changes (obsessive), complete mundane tasks such as crop cultivation (compulsive), plan for the future, and pass folk lore and oral history to their descendants. Governed by village councils, they favour fertility symbols and female rather than male deities. CS societies, form complex civilizations which depend on job specialization, central administration and trade for survival. They have complex written languages, and successful members need literacy skills with formal job qualifications. They claim to have 'tamed nature' and have no strong beliefs or vengeful gods. Established by powerful kings, they develop wealthy democratic governments, which inspite of lavish spending, remain vulnerable to invasion.

HG characteristics are shared by most contemporary tribal societies and historical societies such as the Mongolian conquerors of Europe (Genghis Khan), and the Celtic tribes (Gaels, Gauls) of Britain and Europe (Chadwick N., Severy M.). HG are explorers, pioneers and novelty seekers who thrive on new challenges. SV characteristics are found in rural farming communities, while CS characteristics predominate in 'big city' dwellers.

The negative effects of ADD have been well publicizedbut there has been little emphasis on the positive qualities. Boundless energy, rapid decision making, artistic skills, lateral thinking, creative problem solving and entrepreneurship, the probable legacies of our 'pioneer ADD gene' are qualities shared by many, who are emminent in sports, media, theatre, trades, business, politics and the legal and medical professions.

Australia, pioneered by peoples of mostly Celtic origin,is an example of a society, which over 200 years has incorporated indigenous tribal peoples (Australian Aborigines), explorers and pioneers (HG), immigrant farmers(SV) and city dwellers(CS). Pioneer 'New World' countries including USA, Canada, and New Zealand, all report a high incidence of ADD, in contrast to the 'Old World' countries of Europe where troublesome ADD appears less common. If diagnostic criteria are identical, perhaps the incidence of symptomatic ADD increases where there is a larger gene pool for the 'novelty seeking ADD gene'. Childhood population studies, also suggest that the prevalence and severity of ADD symptoms increase with accumulating life stresses (McGee et al).

Conclusion: ADD characteristics may result from a specific 'novelty seeking' gene, which for millenia has been associated with a biological advantage in situations where energy, risk taking and creativity are essential. ADD symptoms increase when changes in society, environment and education exceed individual capacity for adaptation. Our greatest challenges lie in discovering the links between biology, behaviour and learning, in order to prevent the devasting effects of ADD on individuals and society.

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